Work Order ID 123965

September 04-14 11:54:19 AM

123965

Item ID: D6005-128 Split ... 15/10/23 16

Revision ID:

Accept *N900040100*

Setup **Start** *NS1*

~~**Item Name:** Crosstube Material~~

Stop *NS2*

Start Date: 9/04/14 **Start Qty:** 28.00 (21) *28*

Required Date: 12/15/15 **Req'd Qty:** 28.00 *28*

Reference:

Cust Item ID:

Customer:

Approvals: **Process Plan:** MLJ **Date:** 14-09-04 **Tooling:** ________ **Date:** ________

QC: ________ **Date:** ________ **SPC (Y/N):** ________ **Date:** ________

Run **Start** *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp

Draw Nbr	Revision Nbr
D6005	B

100

100 PURCHASING 0.00

Purchasing

Purchasing

CL 14/09/16 28

Memo 0.00

Issue P/O: 25798

a) Extrude as per Dwg D6005 length = 128" (Ref. D6005-128)

b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11))
Seamless aluminum tube

c) Minimum ultimate tensile strength = 77ksi
d) Minimum tensile yield strength = 66ksi

Ensure material certification is attached

EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.

MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

Work Order ID 123965 *123965*

September-04-14 11:54:19 AM

Item ID: D6005-128 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID:

Item Name: Crosstube Material **Stop** *NS2*

Start Date: 9/04/14 **Start Qty:** 28.00 *28* **Cust Item ID:**

Required Date: 12/15/15 **Req'd Qty:** 28.00 *28* **Customer:**

Reference:

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______ **Run Start** *NR1*

QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______ **Stop** *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110 *110* Packaging Packaging	Receive & Inspect for Damage & Mat'l Certs Memo Ensure material certification is attached	0.00 0.00			16		15/10/23 SL		
			receiving SP 16-01-14						DAS 38 9-89
120 *120* QC Quality Control	QC6- Inspect dimensions to drawing Memo Ensure Material certification comply to Dwg D6005	0.00 0.00				(21)			JAN 19 2016
130 *130* HandFinish Hand Finishing	Chemical Conversion Coat per QSI005 4.1 Memo N/A	0.00 DAS 38 9-89							

Work Order ID 123965
September-04-14 11:54:19 AM

123965

Item ID: D6005-128 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID:
Item Name: Crosstube Material **Stop** *NS2*
Start Date: 9/04/14 **Start Qty:** 28.00 *28* **Cust Item ID:**
Required Date: 12/15/15 **Req'd Qty:** 28.00 *28* **Customer:**
Reference:

Approvals: **Process Plan:** ______ **Date:** ______ **Tooling:** ______ **Date:** ______ **Run Start** *NR1*
QC: ______ **Date:** ______ **SPC (Y/N):** ______ **Date:** ______ **Stop** *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140 *140* QC Quality Control	QC7-Inspect Chemical Conversion Coat **Memo** N/A DAS 38 9-89	0.00 0.00							
150 *150* Packaging Packaging	Identify as per dwg & Stock Location: 003 **Memo**	0.00 0.00				21	Ø		mark 16/01/18
160 *160* QC Quality Control	QC21- Final Inspection - Work Order Release **Memo**	0.00 0.00					MCS	JAN 2 0 2016	MF 16-1-20

Picklist Print

September-04-14 11:54:22 AM

Work Order ID: 123965 *123965*

Parent Item: D6005-128 *D6005-128*

Parent Item Name: Crosstube Material

~~**Start Date:** 9/04/14~~ ~~**Required Date:** 12/15/15~~

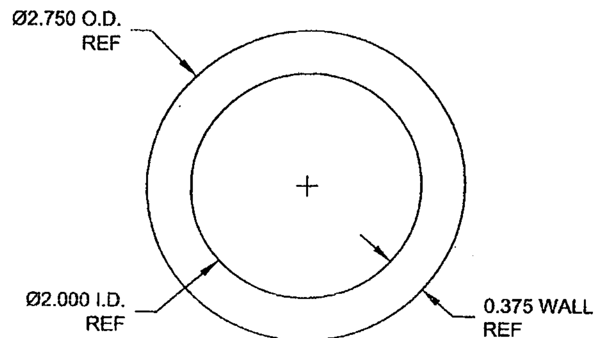
Start Qty: 28.00 **Required Qty:** 28.00

Comments: IPP Rev:C04.06.15Added tolerance to Step 2KJ/JLM
IPP Rev:D 08-09-23 fixe typo in dwg name DD verified by:EC IPP Rev:E
13.03.11 per dwg rev.b DD verified by:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128P *D6005-128P* Crosstube Material		Purchased	No				Each	0.0000	**	28	8	6-01-14	

21X

SPECIFICATION CONTROL DRAWING



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
No. 123965 MCJ
14-09-04

NOTES

1) D6005-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 128" LONG TUBE: D6005-128

2) MATERIAL: 2.750 OD x 0.375 WALL 7075-T6/T6511 SEAMLESS ALUMINUM TUBE. (B)
PER ASTM B210 OR WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi

3) TOLERANCES ARE AS FOLLOWS: (B)
O.D.: ± 0.008 MEAN (±0.012 INCLUDING OVALITY)
WALL: ±0.015 MEAN (±0.038 INCLUDING ECCENTRICITY)
LENGTH: XXX +0.125/-0.000
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH

4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

RELEASED
13/2/17
PER ECN 15-587

REV.	DESCRIPTION	BY	DATE
B	O.D. TOL. NOW 0.008 WAS 0.006, ADD ASTM B210	CP	12.10.29
A	NEW ISSUE	CP	00.11.17

DESIGN	[signature]	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN	[signature]	
CHECKED	[signature]	DRAWING NO. D6005 — REV. B — SHEET 1 OF 1
MFG. APPR.	[signature]	
APPROVED	[signature]	TITLE CROSSTUBE MATERIAL — SCALE NTS
DE APPR.	[signature]	
DATE	12.10.29	

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ART
OSPACE

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

*****OUTSTANDING PO REPRINT*****

Purchase Order ID PO25798

Purchase Order Date 9/16/2014
PO Print Date 1/6/2016

Order From : VU-ALU001
ALUMINIUMWERK UNNA AG
630 3033 SOUTH PARKER RD
AURORA, CO 80014
USA

Ship To : DART AEROSPACE LTD
1270
ABERD
EEN
HAWKE
SBURY,
ON
K6A
1K7
CANAD
A

Contact Name
Vendor Phone 303 755 5672
Vendor Fax 303 755 5936
Ship To Contact
Ship To Phone

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Wire
Currency USD
FOB DDP – (Delivered Duty Paid)

Ship Method Contract Shipping
Ship Acct

Line Nbr	Item ID / Vendor Part Number / Line Comments / Delivery Comments	Description/ Mfg ID	Req Date/ Taxable	Req Qty	Extended Price
10	D6005-128P	Crosstube Material	1/29/2016 Yes 1/29/2016	21.00 Each	$10,983.00
	EXTRUDE AS PER DWG D6005-128 REV. B B123965				
				Line Total:	**$10,983.00**
12	D6009-129P	Crosstube Material	1/29/2016 Yes 1/29/2016	10.00 Each	$12,540.00
	EXTRUDE AS PER DWG D6009-129 REV. A B123974				
				Line Total:	**$12,540.00**

SP 16-0114

ALUnna TUBES

Aluminiumwerk Unna AG · Uelzener Weg 36 · D-59425 Unna

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ONT, K6A1K7
Kanada

Aluminiumwerk Unna AG
Uelzener Weg 36 · D-59425 Unna
Postfach 11 46 · D-59401
fon +49 (0) 23 03-206 - 0
fax +49 (0) 23 03-206- 116
info@alunnatubes.com
www.alunnatubes.com

page: 1
date: 16.12.2015
customer 40980

delivery note 91379

your PO dated: 16.09.2014
your PO No.: P025798
confirmation No.: 54642

contact: Petra Eisenblätter
Tel.: +(303) 755 5672
Fax: +(303) 755 5936
representative: CLAUS J. BETTER

CARRIER: Senator International S

your VAT No.:
AWU VAT No.: DE177869055
Country of origin: Germany

We supply acc. to our delivery terms and conditions:

item	quantity	unit	net kgs
1300	21,000	PC	

AWU article: 36744 / Tariff no. 76082081
Customer article: D6005-128 2.750 X 0.375 X 128 / cust. drwg.
product: Tubes / seamless extruded / EN AW-7075 / round
condition: T 6511 / AMS-QQ-A-200/11(A)

outer diameter:	2,750 INCH	Tol.	+0,012	-0,012
tol.for mean OD			+0,006	-0,006
inner diameter:	2,000 INCH			
wall thickness:	0,375 INCH	Tol.	+0,038	-0,038
fixed length	128,000 INCH	Tol.	+0,125	

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455
straightness 0,01 INCH / 1 FEET / RMS max.: outer 25
tol. on quantity +10 % -10 % / scurfed
2.750" OD 0.375" Wall, 128" lengths
Part Number D6005-128 crosstube
Surface Finish max. RMS 25
Tolerances per ASTM B210 / your drawing D6005
Tubes protected with corrosion protective oil
Tubes line marked

8/16-014

Commerzbank AG, Unna
Konto-Nr. 102 56 00 · BLZ 443 400 37
BIC/S.W.I.F.T. - Code: COBADE FF 443
IBAN: DE 90 4434 0037 01025600 00
Sitz der Gesellschaft: Unna
Amtsgericht Hamm, HRB 3045
Vorstand: Thomas Wiese
Vorsitzende des Aufsichtsrats: Irene Wiese

- Allgemeine Lieferungs- und Zahlungsbedingungen -

(nur kaufmännischer Verkehr)

1. Vertrags[illegible] und Vertrags[illegible]

2. Pr[illegible]

3. Fracht und Verpackung

4. Abn[illegible]

5. Gefahrtragung

6. Haftung für Mängel

7. Schutzr[illegible]

8. [illegible]

9. Kreditgrundl[illegible]

10. Eigentumsvo[illegible]

11. Za[illegible]ngsbedingungen

12. Schlußbestimmungen

ALUnna TUBES

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde: Dart Aerospace Ltd.
Client:
1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: 1509/15
Cert No.: / No. du certificat:
Bestellnummer: PO25798
Order No. / No. de commande
Auftrag: 54642/1300
Our Reference/Notre Reference:

Produkt: Rohre nahtlos gepresst
Product / Produit: *Tubes seamless extruded*
Spezifikation: AMS - QQ - A - 200/11; -
Specification:

Werkstoff: 7075
Alloy/Alliage:
Zustand: T 6511
Temper/État

Abmessung 2,750 INCH x 2,000 INCH x 0,375 INCH x 128,000 INCH
Size / Dimension D6005-128

Kennzeichnung CERT. NO. 1509/15 - ALUnna - 7075 - T6511 - CAST NO. ... AMS - QQ - A - 200/11 - 2.750"OD X 0.375"WALL - HEAT LOT NO. 1304949 - ALUNNA ORDER CONF. NO. 54642/1300 - 1 - P.O. 25798
Marking/Marquage:

Lieferung pcs. 21 lbs 767
Delivered Material / Matérial délivre:

Country of Manufacture: Germany
Products are in accordance with applicable RoHS

1. Chemische Analyse *Chemical Analysis / analyse chimique*

Charge/ Cast No.		Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni	Na
	min.			1,2		2,1	0,18	5,1							
	max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20						
4068/15		0,124	0,186	1,511	0,058	2,535	0,222	5,878	0,040	0,003	0,0193	0,0001	0,0018	0,0055	0,0002

Hydrogen content: 0,09 **ccm/100 g Al** Elements without indication < 0,01 % **country of melt manufacturer: Germany**

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni	Na
4100/15	0,091	0,173	1,370	0,040	2,455	0,212	5,788	0,040	0,003	0,0210	0,0001	0,0015	0,0055	0,0003

Hydrogen content: 0,10 **ccm/100 g Al** Elements without indication < 0,01 % **country of melt manufacturer: Germany**

2. Mechanische Eigenschaften *Mechanical Properties / Valeurs Mécaniques*

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Cast/Heat/ pcs.
	81,0	73,0	7,0			
1	85,695	78,010	8,0			4100 - 16 pcs.
2	85,985	78,010	8,0			4068 - 5 pcs.

SP 16-01-14.

RMS: outside 25 - max. 10,3 µ"

Ergebnis der Prüfungen: Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results: We confirm that the delivery has been tested and applies to the agreements made on receipt of the order
Resultats: Nous confirmons que la livraison a été controlée et correspond avec les conventions faites à la réception de la commande

mergardtri

26.10.2015



Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2009
valid until 2016-11-10
Cert.- Reg. No.: 001959 QM08; 001959 ASH 09-1



ALUnna

Abnahmebeauftragter

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany

ALUnna TUBES

Packinglist ALUnna AG

ALUnna ref. no.	54642/1300
Customer PO.	P.O. 25798
Date:	10.22.15

Boxmarking:

Dart Aerospace, PO: 25798	
D6005-128	Made in Germany
Destin.: Hawkesbury ONT, Canada	

We hereby declare that the wooden packing material are totally free from bark and apparently free from live plant pests

Item no.	Box no.	OD (inch)	ID (inch)	Wall (inch)	Net Weight (lbs)	Tare lbs	Gross Weight	Pieces	lengths (ft)	Boxdimension Lengths (inch)	Width (inch)	height (inch)	Cast. / Heat No. Top	Pcs.	Cast. / Heat No. Middle	Pcs.	Cast. / Heat No. Bottom	Pcs.
1300	1	2,750	2,000	0,375	767	225	992	21	11	151,575	22,441	22,441	4100/1304949	16			4068/1304949	5
					767	**225**	**992**	**21**				1,251 m³						

SP 16-01-14

S:\VERSAND\USA_Packliste\54642_1300



EXTRUSION INSPECTION SHEET

Measurment unit *Inches* Symbol "

TUBE #	TOTAL LENGTH	SIDE A DIA R1	SIDE A DIA R2	SIDE B DIA R1	SIDE B DIA R2	INSIDE DIA	wall thickness measured w/vern		Strightness at 12"in middle	Rockwell Reading	ULTRA SONIC MEASURMENTS LOCATION on tube	R1	R2	R3	R4
DWG										N/A	Middle	N/A			
1	128"	2.750	2.765	2.749	[illegible]	1.992	.410	.386		N/A	Middle	.369	.375	.390	.390
2	128"	2.748	2.753	2.749	2.763	1.992	.395	.380		N/A	Middle	.383	.390	.385	.382
3	128"	[illegible]	2.749	2.764	2.748	1.993	.396	.376		N/A	Middle	.378	.380	.390	.386
4	128"	2.764	2.748	2.750	[illegible]	1.988	.386	.401		N/A	Middle	.382	.388	.385	.378
5	128"	2.773	2.750	2.754	2.776	1.994	.384	.376		N/A	Middle	.377	.383	.391	.385
6										N/A	Middle				
7										N/A	Middle				
8										N/A	Middle				
9										N/A	Middle				
10										N/A	Middle				
11										N/A	Middle				
12										N/A	Middle				
13										N/A	Middle				
14										N/A	Middle				
15										N/A	Middle				
16										N/A	Middle				

PART #	P/O#	BATCH #	Notes:
6005-128	25798	123965	